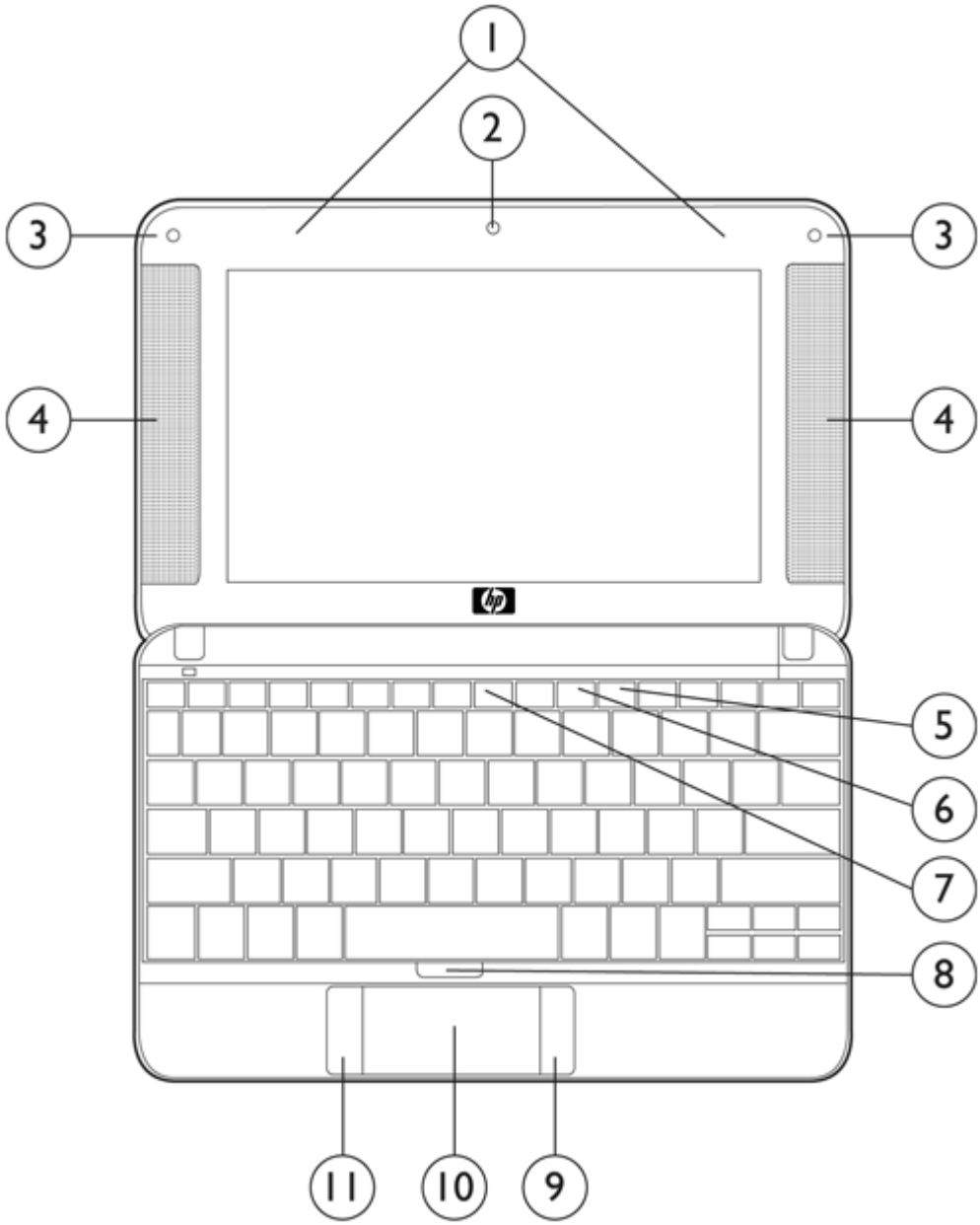
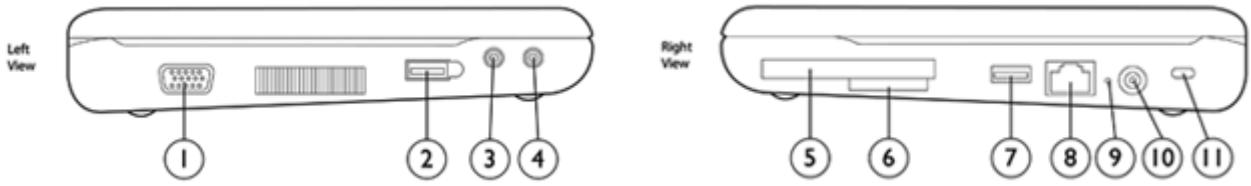
Overview

HP recommends
Windows Vista® Business

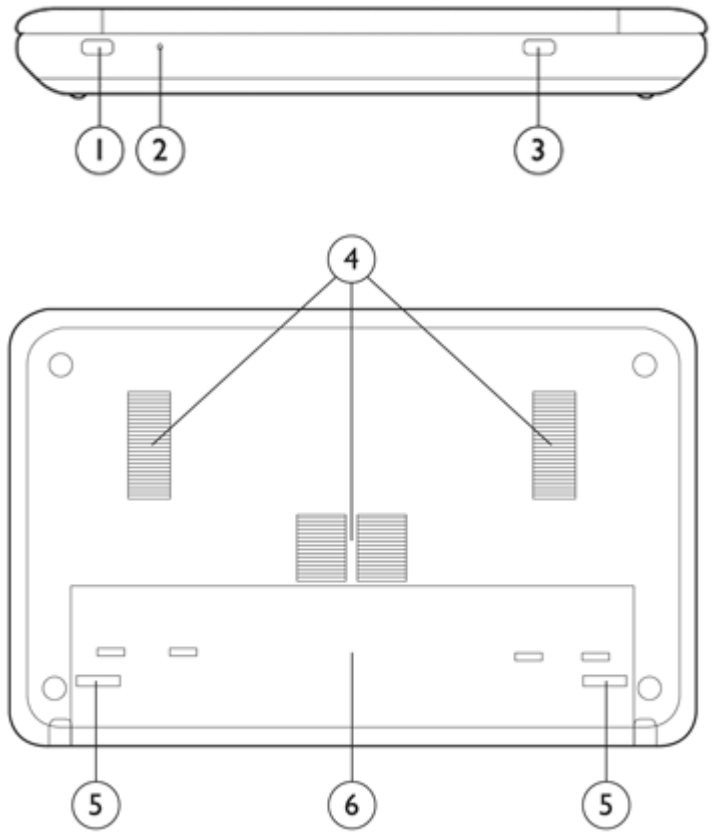


1. Integrated stereo microphones
2. Optional VGA camera
3. WLAN antennas (with WLAN option)
4. Stereo speakers
5. Volume up function key
6. Volume down function key
7. Volume mute function key
8. Touchpad on/off button
9. Right touchpad button
10. Touchpad with scroll zone
11. Left touchpad button

Overview



1. VGA/external monitor
2. Powered USB 2.0
3. Stereo microphone in
4. Stereo headphone/line out
5. ExpressCard/54 slot
6. Secure Digital slot
7. USB 2.0
8. RJ-45/ethernet
9. Battery LED
10. Power connector
11. Kensington lock slot



1. Power button with LED
2. Internal storage activity / HP 3D DriveGuard LED
3. Wireless on/off button with LED
4. Vents
5. Battery release latches
6. Battery bay

Overview

At A Glance

- Full-function PC with utmost mobility and durable all-aluminum case
- Ultra-portable light-weight design starting at 2.8 lb (1.27 kg) and 1.05 in (27 mm) thin at front
- 8.9-inch diagonal WXGA or WSVGA scratch-resistant display
- 92% full-size QWERTY keyboard and touchpad
- Optional 802.11 a/b/g wireless LAN and Bluetooth, HP Wireless Assistant
- Up to 160 GB 7200 rpm hard drive with HP 3D DriveGuard (supported on Windows models only)
- Optional integrated VGA Webcam
- ExpressCard/54 slot
- Secure Digital slot for HCSD and MMC media cards
- Upgradeable up to 2GB of 667 MHz DDR2 SDRAM

Standard Features

Processors	VIA C7™-M ULV processor (1.0GHz,* 128 KB L2 cache, 400 MHz FSB) VIA C7-M ULV processor (1.2 GHz, 128 KB L2 cache, 800 MHz FSB) VIA C7-M ULV processor (1.6 GHz, 128 KB L2 cache, 800 MHz FSB) * SuSE Linux models only NOTE: Processor speed denotes maximum performance mode; processors will run at lower speeds in battery optimization mode.	
Operating System	**Preinstalled**	Genuine Windows Vista Home Basic 32* Genuine Windows Vista Business 32* Genuine Windows Vista Business downgrade to Genuine Windows XP Professional installed*† SuSE Linux Enterprise Desktop 10 FreeDOS
	Supported	Genuine Windows XP Professional
	* Certain Windows Vista product features require advanced or additional hardware. See http://www.microsoft.com/windowsvista/getready/hardwarereqs.mspx and http://www.microsoft.com/windowsvista/getready/capable.mspx for details. Windows Vista Upgrade Advisor can help you determine which features of Windows Vista will run on your computer. To download the tool, visit http://www.windowsvista.com/upgradeadvisor. † Windows Vista Business disk also included for future upgrade if desired. To qualify for this downgrade an end user must be a business (including governmental or educational institutions) and is expected to order annually at least 25 customer systems with the same custom image.	
Chipset	VIA 896	
Graphics	VIA Chrome 9 Up to 256 MB of shared system memory for Windows with 2 GB of system memory Up to 128 MB of shared system memory for Windows with 1 GB of system memory Up to 64 MB of shared system memory for Linux	
Display	**Internal**	8.9-inch WXGA display with 1280 x 768 resolution 8.9-inch WSVGA display with 1024 x 600 resolution Scratch-resistant treatment on acrylic panel cover
	External	Up to 32-bit per pixel color depth VGA port supports resolutions up to 2048 x 1536 at 75 Hz, and lower resolutions at up to 100 Hz NOTE: Resolutions are dependent upon monitor capability, and resolution and color depth settings.

Standard Features

Memory	**Standard**	1024 MB or 2048 MB 667 MHz* DDR2 SDRAM SODIMM; one SODIMM slot
	Maximum	Supports up to 2048 MB maximum
	* An 800 MHz DDR2 SDRAM SODIMM memory module may be substituted (running at the maximum system supported speed of 667 MHz) NOTE: Due to the non-industry standard nature of some third-party memory modules, we recommend HP branded memory to ensure compatibility.	
Communications	Integrated Broadcom NetLink Gigabit Ethernet PCI Controller (10/100/1000 NIC)	
Wireless Devices	Support for secure, integrated wireless LAN options featuring support for the latest industry standards. Wireless LAN is factory configurable only. Integrated Bluetooth is also available (factory configurable only) and can be combined with any of the supported wireless LAN options.	
	All 802.11 integrated wireless LAN options	Wi-Fi certified Cisco Compatible Extensions support (Version 4.0) Wired Equivalent Privacy (WEP) support up to 128-bit keys Wi-Fi Protected Access (WPA) and WPA2 support 802.1x authentication support, including EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, and LEAP Advanced Encryption Standard (AES) support WiFi certified for WPA2, WMM Dual antennas integrated in the display enclosure
	Broadcom 4311AG 802.11a/b/g Wi-Fi Adapter	Integrated support for 802.11 a, b and g Up to 54-mbps data rate
	Broadcom 4311BG 802.11b/g Wi-Fi Adapter	Integrated support for 802.11 b and g Up to 54-mbps data rate
	HP Integrated Module with Bluetooth Wireless Technology	Bluetooth Specification v2.0 compliant Works with a wide range of Bluetooth devices
Keyboard	Spill-resistant keyboard is 92% of full size, 101/102-key compatible with isolated inverted-T cursor control keys, both left and right control and alt keys, 12 function keys, and hotkey combinations for audio volume, power conservation, brightness, and other features. US and international key layouts are available.	
Pointing Device	Touchpad with scroll zone and two soft-touch buttons	
Expansion Card Slots	**ExpressCard/54 slot**	Supports ExpressCard/54 and ExpressCard/34
	Secure Digital slot	Supports HCSD (Secure Digital), MMC (MultiMedia Card)

Standard Features

Storage	Internal Storage Device	120/160 GB 5400 rpm SATA Hard Drive 120/160 GB 7200 rpm SATA Hard Drive
	NOTE: Hard drives are customer removable and will withstand multiple insertion/removal cycles. Up to 10 GB is reserved for the system recovery software.	
	HP 3D DriveGuard*	The hard drive is mounted to the notebook frame, reducing the transmission of shock away from the hard drive. Uses three-axis digital motion detection with intelligent sensitivity to help protect the hard drive during normal use from shock and vibration. The digital accelerometer temporarily halts all data transfer and parks the hard drive when abrupt motion is detected.
	External Optical Drives	Via optional HP External MultiBay II (9.5-mm): MultiBay II DVD-ROM Drive MultiBay II DVD/CD-RW Combo Drive MultiBay II DVD+/-RW SuperMulti DL Drive
	* Windows models only	

Interfaces	ExpressCard/54 slot	Supports ExpressCard/54 and ExpressCard/34
	External Monitor	One – VGA
	Stereo Microphone In	One
	Stereo Headphone/Line out	One
	Power Connector	One
	RJ-45/Ethernet	One
	USB 2.0	Two (one powered)
	LED Status Indicators	Five

Audio	ADI1984HD High Definition CODEC 24-bit DAC Integrated stereo speakers Stereo headphone/line out Stereo microphone in

Standard Features

Software	Preinstalled Software with Windows Vista or Windows XP	MS Office Ready 2007 Norton Internet Security MS Live Messenger Adobe Flash Player Roxio Creator Basic Intervideo WinDVD PDF Complete SE HP Webcam HP Recovery Manager (Vista only)
	Preinstalled Software with SuSE Linux Enterprise Desktop 10	OpenOffice Suite Evolution Email Evince Document Viewer OpenOffice Draw F-Spot Photo Brower Gnome CD/DVD Creator Helix Banshee Music Player Real Player 10 Media Player Firefox Web Browser Gaim Instant Messenger Gnome FTP File Transfer Liferea Feed Reader Mutt Mail Client
SMBIOS Version 2.4	System Management BIOS, previously known as DMI BIOS, is used to store system management information.	
Security	Standard Features	Configuration Control Hardware Memory Change Alert Ownership Tag Setup Password Power-On Password Kensington Lock Slot Support for Computrace / LoJack for Laptops (must be purchased separately)
Power Supply	External 65-watt Smart AC adapter, 6-foot (1.8-meter) power cord included. Total length including External AC adapter is 12 feet (3.66 meter). HP Fast Charge Technology* *Fast Charge Technology recharges your battery up to 90% within 90 minutes when the system is off. Fast Charge Technology does not apply to 12-cell Ultra-Capacity batteries.	
Battery	Primary Battery	3-cell (28 WHr) high capacity Li-Ion 6-cell (55 WHr) high capacity Li-Ion

Standard Features

Battery Life	**3-cell Primary Battery**	Up to 2 hours 15 minutes
	6-cell Primary Battery	Up to 4 hours 30 minutes
	NOTE: The listed battery life measurements were taken on models running Microsoft Windows Vista. Battery life will vary depending on the product configuration, product model, applications loaded on the product, power management settings of the product, and the product features used by the customer. As with all batteries, the maximum capacity of this battery will decrease with time and usage.	
System Standby Time	Up to 1 week	

Power Conservation	Standby ACPI compliance

Service and Support	HP Services includes a one-year standard parts and labor warranty, pick-up or carry-in, and toll-free 7 x 24 hardware technical phone support (depending on model). On-site service and warranty upgrades are also available. (depending on model). For configurations with SuSE Linux Enterprise Desktop 10, HP Services may vary depending on the country of purchase, and toll-free 5 x 8 (Monday through Friday; 9:00am to 5:00pm CST) hardware technical phone support is available. NOTE: Certain restrictions and exclusions apply. Consult the HP Customer Support Center for details. http://h20000.www2.hp.com/bizsupport/TechSupport/ProductRoot.jsp.

Select Model(s)

2133 SKU Part# KX869AT#ABA Smart Buy	**Processor**	VIA C7®-M ULV Processor (1.2 GHz, 128 KB L2 cache)
	Operating System	SuSE Linux Enterprise Desktop 10
	System Memory	1024 MB 667-MHz DDR2 (1 DIMM)
	Hard Drive	120-GB 5400 rpm
	Display	8.9-inch diagonal WXGA Integrated VGA camera
	Graphics	Via Chrome 9
	Audio	ADI High Definition CODEC Stereo headphone/line out and microphone in Integrated microphone
	Communications	Integrated Broadcom Gigabit Network Connection (10/100/1000 NIC)
	Integrated Wireless	Broadcom 802.11a/b/g
	Pointing Device	Touchpad with scroll zone
	Battery	3-cell (28 WHr) Lithium-Ion
	Power	External 65W adapter
	Warranty	1/1/0

Standard Features

2133 SKU Part# KX868AT#ABA Smart Buy	Processor	VIA C7®-M ULV Processor (1.2 GHz, 128 KB L2 cache)
	Operating System	Genuine Windows Vista Home Basic 32
	System Memory	1024 MB 667-MHz DDR2 (1 DIMM)
	Hard Drive	120-GB 5400 rpm
	Display	8.9-inch diagonal WXGA Integrated VGA camera
	Graphics	Via Chrome 9
	Audio	ADI High Definition CODEC Stereo headphone/line out and microphone in Integrated microphone
	Communications	Integrated Broadcom Gigabit Network Connection (10/100/1000 NIC)
	Integrated Wireless	Broadcom 802.11a/b/g
	Pointing Device	Touchpad with scroll zone
	Battery	3-cell (28 WHr) Lithium-Ion
	Power	External 65W adapter
	Warranty	1/1/0

2133 SKU Part# KX871AA#ABA Regional	Processor	VIA C7®-M ULV Processor (1.2 GHz, 128 KB L2 cache)
	Operating System	Genuine Windows Vista Home Basic 32
	System Memory	1024 MB 667-MHz DDR2 (1 DIMM)
	Hard Drive	160-GB 5400 rpm
	Display	8.9-inch diagonal WXGA Integrated VGA camera
	Graphics	Via Chrome 9
	Audio	ADI High Definition CODEC Stereo headphone/line out and microphone in Integrated microphone
	Communications	Integrated Broadcom Gigabit Network Connection (10/100/1000 NIC)
	Integrated Wireless	Broadcom 802.11a/b/g, Bluetooth 2.0
	Pointing Device	Touchpad with scroll zone
	Battery	6-cell (55 WHr) Lithium-Ion
	Power	External 65W adapter
	Warranty	1/1/0

Standard Features

2133 SKU Part# KX870AT#ABA Smart Buy	Processor	VIA C7®-M ULV Processor (1.6 GHz, 128 KB L2 cache)
	Operating System	Genuine Windows Vista Business 32
	System Memory	2048 MB 667-MHz DDR2 (1 DIMM)
	Hard Drive	120-GB 7200 rpm
	Display	8.9-inch diagonal WXGA Integrated VGA camera
	Graphics	Via Chrome 9
	Audio	ADI High Definition CODEC Stereo headphone/line out and microphone in Integrated microphone
	Communications	Integrated Broadcom Gigabit Network Connection (10/100/1000 NIC)
	Integrated Wireless	Broadcom 802.11a/b/g, Bluetooth 2.0
	Pointing Device	Touchpad with scroll zone
	Battery	6-cell (55 WHr) Lithium-Ion
	Power	External 65W adapter
	Warranty	1/1/0

2133 SKU Part# KR922UT#ABA Smart Buy	Processor	VIA C7®-M ULV Processor (1.0 GHz, 128 KB L2 cache)
	Operating System	SuSE Linux Enterprise Desktop 10
	System Memory	512 MB 667-MHz DDR2 (1 DIMM)
	Hard Drive	4GB Flash
	Display	8.9-inch diagonal WXGA Integrated VGA camera
	Graphics	Via Chrome 9
	Audio	ADI High Definition CODEC Stereo headphone/line out and microphone in Integrated microphone
	Communications	Integrated Broadcom Gigabit Network Connection (10/100/1000 NIC)
	Integrated Wireless	Broadcom 802.11a/b
	Pointing Device	Touchpad with scroll zone
	Battery	3-cell (28 WHr) Lithium-Ion
	Power	External 65W adapter
	Warranty	1/1/0

Options

Memory	HP 2 GB (DDR2 667 MHz) SODIMM	EM995AA
	HP 1 GB (DDR2 800 MHz) SODIMM*	KT292AA
	HP 2 GB (DDR2 800 MHz) SODIMM*	KT293AA
	* Runs at maximum system supported speed of 667 MHz	
Storage Solutions	HP Versatile Storage Cart	AL587AA
MultiBay II Storage (9.5-mm)	HP External MultiBay II	PA509A#xxx
	HP MultiBay II DVD-ROM Drive	PA849A
	HP MultiBay II DVD/CD-RW Combo Drive	PA850A
	HP MultiBay II DVD+/-RW SuperMulti DL Drive	PA851A
	HP 80-GB 5400rpm MultiBay II Hard Drive	PH357A
Power	HP 1-bay Battery Charging Station	RW635AA#xxx
	HP 5-bay Battery Charging Station	RW636AA#ABA
	HP 2133 Battery Adapter Kit (June 2008)	KV828AA
	65W Smart AC Adapter	ED494AA#ABA
	HP 2133 6-cell Primary Battery (June 2008)	KU528AA
Carrying Cases	HP 2133 Carrying Case	TBD
	HP Ultra-portable Carrying Case	TBD
	HP Basic Carrying Case	AJ078AA
	HP Value Nylon Case	RR314AA
	HP Universal Nylon Case	RR315AA
	HP Executive Leather Case	RR316AA
	HP Deluxe Nylon Backpack	RR317AA
	HP Deluxe Roller Case	GD405AA
Security	HP/Kensington MicroSaver Security Lock	PC766A
Input/Output Devices	HP USB Keyboard & Mouse Bundle	RC465AA#xxx
	HP USB/PS2 Optical 2-Button Scroll Mouse	DC369A
	HP USB Optical Travel Mouse	RH304AA

Memory

Supports up to 2048 MB* of 667 MHz DDR2 SDRAM
One DIMM slot
DIMM sizes supported: 1024 MB and 2048 MB

Standard Memory 1024 MB (1024 MB x 1)
2048 MB (2048 MB x 1)

Optional Memory Upgrades Support for up to 2048 MB* of memory is available (with the installation of optional DDR2 SDRAM memory kit). Memory slot is user accessible. Please refer to the Hardware and Software Guide for installation procedures.

Up to	Slot 1
2048 MB	2048 MB

NOTE: Due to the non-industry standard nature of some third-party memory modules, we strongly recommend using only HP branded memory modules to ensure compatibility.

Memory Upgrades

HP 1 GB (DDR2 667 MHz) SODIMM	EM994AA
HP 2 GB (DDR2 667 MHz) SODIMM	EM995AA
HP 1 GB (DDR2 800 MHz) SODIMM*	KT292AA
HP 2 GB (DDR2 800 MHz) SODIMM*	KT293AA

* Runs at maximum system supported speed of 667 MHz

Storage

Internal Storage Device

Hard Drives (SMART SATA)	Quantity Supported	Drive Bay
120 GB 5400 rpm	One	Dedicated hard drive bay
160 GB 5400 rpm	One	Dedicated hard drive bay
120 GB 7200 rpm	One	Dedicated hard drive bay
160 GB 7200 rpm	One	Dedicated hard drive bay

Optical Drive Support

External Optical Drives	Quantity Supported	Optional Expansion Unit
MultiBay II DVD-ROM Drive MultiBay II DVD/CD-RW Combo Drive MultiBay II DVD+/-RW SuperMulti DL Drive	One	HP External MultiBay II

System Unit	**Dimensions** (HxWxD)	1.05 (at front) x 10.04 x 6.5 in 27 (at front) x 255 x 165 mm	
	Weight	Starting at 2.8 lb (1.27 kg)	
	NOTE: Height varies depending upon where on the notebook the measurement is made. Weight includes 3-cell battery, 1 GB memory, 4 GB flash module, 802.11 wireless communications module. Weight varies by configuration and components.		
	Stand-Alone Power Requirements	Normal Operating Voltage	19 V
		Average Operating Power	25 W
		Max Operating Power	< 65 W
	Temperature	Operating	32° to 95° F (0° to 35° C)
		Non-operating	-4° to 140° F (-20° to 60° C)
	Relative Humidity	Operating	10% to 90%, non-condensing
		Non-operating	5% to 95%, 101.6° F (38.7° C) maximum wet bulb temperature
	Shock	Operating	125 G, 2 ms, half-sine
		Non-operating	200 G, 2 ms, half-sine
	Random Vibration	Operating	0.75 grms
		Non-operating	1.50 grms
	Altitude (unpressurized)	Operating	-50 to 10,000 ft (-15.24 to 3,048 m)
		Non-operating	-50 to 40,000 ft (-15.24 to 12,192 m)
	Industry Standard Certifications	UL	Yes
		CSA	Yes
		FCC Compliance	Yes
		ICES	Yes
		Australia / NZ A-Tick Compliance	Yes
		CCC	Yes
		Japan VCCI Compliance	Yes
		MIC	Yes
		BSMI	Yes

Technical Specifications

HP 65W Smart AC Adapter	Dimensions	4.17 x 1.85 x 1.1 in (10.6 x 4.7 x 2.8 cm)	
	Weight	0.62 lb (280 g)	
	Input	100 to 240 VAC	
		Input Efficiency	83% min at 115 VAC
		Input frequency range	47 to 63 Hz
		Input AC current	1.7 A at 90 VAC, 0.85 A at 180 VAC
	Output	Output power 65W	65W
		DC output	18.5V
		Hold-up time	5 msec at 115 VAC input
		Output current limit	<11A, Over voltage protection- 29V max automatic shutdown
	Connector	3 pin/grounded, mates with interchangeable cords	
	Environmental Design	Operating temperature	32° to 104° F (0° to 40° C)
		Non-operating (storage) temperature	-4° to 149° F (-20° to 65° C)
		Altitude	0 to 10,000 ft (0 to 3,048 m)
		Humidity	20% to 80%
		Storage Humidity	10% to 90%
	EMI and Safety Certifications	CE Mark - full compliance with LVD and EMC directives; Worldwide safety standards - IEC60950, EN60950, UL60950, Class1, SELV; Agency approvals - C-UL-US, NORDICS, DENAN, EN55022 Class B, FCC Class B, CISPR22 Class B, CCC, NOM-1 NYCE; MTBF - over 200,000 hours at 25°C ambient condition.	

6-Cell (55 WHr) Lithium-on battery	Dimensions (HxWxL)	1.69 x 1.57 x 8.19 in (4.3 x 4 x 20.8 cm)	
	Weight	0.77 lb (0.35 kg)	
	Cells/Type	6-cell Lithium-Ion	
	Energy	Watt-hour Capacity	55Wh
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (–10° to 60° C)
		Non-operating	–4° to 140° F (–20° to 60° C)
	Battery Re-Charge Time	System in OFF Mode or Standby	2.5 hours
		System ON	3 to 5 hours (depending on system power consumption)
		HP Fast Charge Technology	Charges the battery up to 90% within 90 minutes when system is OFF
	Fuel Gauge	When pressed, LEDs light indicating level of charge remaining on battery	

Technical Specifications

3-Cell (28.8 WHr) Lithium-on battery	Dimensions (HxWxL)	1.69 x 0.79 x 8.19 in (4.3 x 2 x 20.8 cm)	
	Weight	0.39 lb (0.176 kg)	
	Cells/Type	3-cell Lithium-Ion	
	Energy	Watt-hour Capacity	28.8 WHr
	Temperature	Operating (Charging)	32° to 113° F (0° to 45° C)
		Operating (Discharging)	14° to 140° F (–10° to 60° C)
		Non-operating	–4° to 140° F (–20° to 60° C)
	Battery Re-Charge Time	System in OFF Mode or Standby	2.5 hours
		System ON	3 to 5 hours (depending on system power consumption)
		HP Fast Charge Technology	Charges the battery up to 90% within 90 minutes when system is OFF
8.9-inch diagonal WXGA Display	Active Area (W x H)	7.63 x 4.58 in (19.39 x 11.63 cm)	
	Diagonal Size	8.9 in (22.6 cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	400:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	200 nit (typical)	
	Pixel Resolution	Pitch	.15 mm
		Format	1280 x 768
		Configuration	RGB stripe
	Backlight	CCFL	
	PPI	168	
	Viewing Angle	±60° Horizontal, ±30° Vertical (typical)	
8.9-inch diagonal WSVGA Display	Active Area (W x H)	7.68 x 4.46 in (19.51 x 11.34 cm)	
	Diagonal Size	8.9 in (22.6 cm)	
	Surface Treatment	Anti-glare	
	Contrast Ratio	300:1 (typical)	
	Refresh Rate	60 Hz	
	Brightness	180 nit (typical)	
	Pixel Resolution	Pitch	.19 mm
		Format	1024 x 600
		Configuration	RGB stripe
	Backlight	LED	
	PPI	133	
	Viewing Angle	±45° Right/Left, ±15° Up, ±35° Down (typical)	

Internal Storage

160 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lb (113 g)	
	Capacity	160 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-7 / SATA 1.0a	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	1 ms
		Average	10 ms
		Maximum	18 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	312,581,808	
	Operating Temperature	41° to 140° F (5° to 60° C) [case temp]	
	Features	ATA Security	
120 GB 7200 rpm SATA Hard Drive	Drive Weight	0.25 lb (113 g)	
	Capacity	120 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-7 / SATA 1.0a	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	1 ms
		Average	10 ms
		Maximum	18 ms
	Rotational Speed	7200 rpm	
	Logical Blocks	234,441,648	
	Operating Temperature	41° to 140° F (5° to 60° C) [case temp]	
	Features	ATA Security	

Technical Specifications

160 GB 5400 rpm SATA Hard Drive	Drive Weight	0.22 lb (101 g)	
	Capacity	160 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-7 / SATA 1.0a	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	3 ms
		Average	13ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	312,581,808	
	Operating Temperature	41° to 140° F (5° to 60° C) [case temp]	
	Features	ATA Security	
120 GB 5400 rpm SATA Hard Drive	Drive Weight	0.22 lb (101 g)	
	Capacity	120 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-7 / SATA 1.0a	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	3 ms
		Average	13ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	234,441,648	
	Operating Temperature	41° to 140° F (5° to 60° C) [case temp]	
	Features	ATA Security	

Removable Storage Drives - MultiBay II

Technical Specifications

DVD-ROM Drive	Dimensions	0.37 x 5.51 x 5.04 in (0.95 x 14.0 x 12.8 cm)	
	Weight	0.34 lb (155 g)	
	Access Times	Random	<120 ms CD
			<200 ms DVD
	Max Data Transfer Rate	24X-CD-ROM	3,600 KB/s
		8X-DVD	10,800 KB/s
	Transfer Mode	Multiword DMA Mode 2	
	Interface	EIDE	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW	
	Supported Media (write)	None	
	Max Media Capacity (read)	8.5 GB	
	Transport	Tray Loading	
DVD/CD-RW Combo Drive	Dimensions	0.37 x 5.51 x 5.04 in (0.95 x 14.0 x 12.8 cm)	
	Weight	0.45 lb (205 g)	
	Access Times	Random	<120 ms CD
			<155 ms DVD
	Max Data Transfer Rate	24X CD-ROM	3,600 KB/s
		8X DVD	10,800 KB/s
		24X CD-R	3,600 KB/s
		24X CD-RW	3,600 KB/s
	Transfer Mode	Multiword DMA Mode 2	
	Interface	EIDE	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW	
	Supported Media (write)	CD-R, CD-RW	
	Max Media Capacity (read)	8.5 GB	
	Max Media Capacity (write)	700 MB	
	Transport	Tray loading	

Technical Specifications

DVD+/-RW SuperMulti DL Drive	Dimensions	0.37 x 5.51 x 5.04 in (0.95 x 14.0 x 12.8 cm)	
	Weight	0.45 lb (205 g)	
	Access Times	Random	<150 ms CD
			<125 ms DVD
	Max Data Transfer Rate	24X CD-ROM	3,600 KB/s
		8X DVD	10,800 KB/s
		24X CD-R	3,600 KB/s
		10X CD-RW	1,500 KB/s
		4X DVD+R	5,400 KB/s
		2.4X DVD+RW	3,240 KB/s
		4X DVD-R	5,400 KB/s
		2X DVD-RW	2,700 KB/s
		2X DVD-RAM	2,700 KB/s
	Transfer Mode	Multiword DMA Mode 2	
	Interface	EIDE	
	Supported Media (read)	CD-DA, CD+(E)G, CD-MIDI, CD-TEXT, CD-ROM, CD-ROM XA, MIXED MODE CD, CD-I, CD-I Bridge (Photo-CD, Video CD), Multisession CD (Photo-CD, CD-EXTRA, Portfolio, CD-R, CD-RW), CD-R, CD-RW, DVD-ROM (DVD-5, DVD-9, DVD-10, DVD-18), DVD-R, DVD-RW, DVD+R, DVD+RW, DVD-RAM	
	Supported Media (write)	CD-R, CD-RW, DVD+R, DVD+RW, DVD-R, DVD-RW, DVD-RAM	
	Max Media Capacity (read)	8.5 GB	
	Max Media Capacity (write)	8.5 GB	
	Transport	Tray Loading	

80-GB 5400 rpm MultiBay II Hard Drive	MultiBay II Drive Adapter	Dimensions (H x W x D)	0.37 x 5.51 x 5.04 in (0.95 x 14.0 x 12.8 cm)
		Weight	0.16 lb (72 g)
	Drive Weight	0.22 lb (101 g)	
	Capacity	80 GB	
	Height	0.37 in (9.5 mm)	
	Width	2.75 in (70 mm)	
	Interface	ATA-6	
	Transfer Rate	Synchronous (maximum)	100 MB/s (Drive Capability)
	Seek Time (typical reads, including settling)	Single Track	3 ms
		Average	13 ms
		Maximum	24 ms
	Rotational Speed	5400 rpm	
	Logical Blocks	156,301,488	
	Operating Temperature	41° to 131° F (5° to 55° C)	
	Features	ATA Security	

PremierSound Audio

Hardware	Implementation	ADI1984HD High Definition CODEC
	Volume Controls	Up, down, and mute function keys
	Full Duplex	Yes
	Sound Blaster Pro compatible	Yes
	Microphone Jack	Stereo or mono
	Headphone/Line Out Jack	Stereo
Audio Output Quality	Frequency Response	20 Hz - 20 kHz
	Signal to Noise Ratio	>85 dB
	Total Harmonic Distortion	0.01%
	Noise Floor	-110 dB
	Play/Record Sampling Rate(s)	8 kHZ - 48kHz
	DAC	16, 20 or 24-bit
	ADC	16 or 20-bit
Internal Speakers	Power Rating	2 Watts
	Impedance	4 Ohms

Communications

Integrated Broadcom NetLink Gigabit Ethernet PCI Controller (BCM5788M)	Ethernet Features	10 Mbit/s operation (10BASE-T; IEEE 802.3i; IEEE 802.3 clauses 13-14) 100 Mbit/s operation (100BASE-TX; IEEE 802.3u; IEEE 802.3 clauses 21-30) 1000 Mbit/s operation (1000BASE-T; IEEE 802.3z and 802.3ab; IEEE 802.3 clauses 34-42) Auto-Negotiation (Automatic Speed Selection) Full Duplex Operation at all Speeds, Half Duplex operation at 10 and 100 Mbit/s IEEE 802.1p QoS (Quality of Service) Support IEEE 802.3x Flow Control (IEEE 802.3 clauses 31-32; configurable)
	Power Management	ACPI compliant -- multiple power modes Situation-sensitive features reduce power consumption NIC Battery Saving Mode (enabled by default)
	Performance Features	TCP/IP/UDP Checksum Offload (configurable)

	Manageability	Wake-on-LAN from standby and hibernation (Magic Packet and Microsoft Wake-Up Frame); Wake-on-LAN from off (Magic Packet only) PXE 2.1 Remote Boot Statistics Gathering (SNMP MIB II, Ethernet-like MIB, Ethernet MIB (802.3x, clause 30)) Comprehensive diagnostic and configuration software suite
	Interface	32-bit PCI, 33-MHz
	NIC Device Driver Name	Broadcom NetLink Gigabit Ethernet
	Drivers Available	Microsoft Windows XP Microsoft Windows 2000
Broadcom 4311AG 802.11a/b/g Wi-Fi Adapter	**Wireless LAN Standards**	IEEE 802.11a IEEE 802.11b IEEE 802.11g
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant (details at: www.hp.com/go/notebooks/WLAN)
	Frequency Band	2.4 GHz and 5 GHz
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
	Security[1]	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST, EAP-SIM. Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4).
	Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.
	Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK
	Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)
	Roaming	IEEE 802.11 compliant roaming between access points
	Output Power (for CKK)[2]	17.5 dBm
	Output Power (for OFDM; power varies by data rate)[2]	15 dBm
	Power Consumption	Transmit: 2.0 W (max) Receive: 1.5 W (max) Idle mode[3]: 390 mW (nominal) Sleep mode: 20 mW (max)
	Power Management	ACPI compliant power management 802.11 compliant power saving mode
	Receiver Sensitivity[4]	54 Mbps: -72 dBm, 11 Mbps: -88 dBm , 1 Mbps: -97 dBm

Technical Specifications

Antenna type	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure	
Range	802.11 a – Typical (@6 Mbps)	600 feet – Outdoor Open Area 150 feet – Indoor, Office environment
	802.11 b – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment
	802.11 g – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment
Form Factor	PCI-Express MiniCard	
Weight	0.026 lb (12 g)	
Dimensions	0.19 x 1.2 x 2.0 in (4.75 x 29.85 x 50.8 mm)	
Operating Voltage	3.3v +/- 10%	
Temperature	Operating Non-operating	32° to 176° F (0° to 80° C) –40° to 176° F (–40° to 80° C)
Humidity	Operating Non-operating	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
Configuration Utility[5]	Choice of Configuration Utility: • Microsoft Windows XP Wireless Network Connection Manager • Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support)	
LED Activity	LED Off – Radio OFF; Solid LED On – Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. In Power Save Polling mode.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows 2000 or XP. WLAN may also be compatible with certain third-party software supplicants.

Broadcom 4311BG 802.11b/g Wi-Fi Adapter	Wireless LAN Standards	IEEE 802.11b IEEE 802.11g
	Interoperability	Wi-Fi certified Cisco Compatible Extensions Program compliant with Microsoft Windows 2000 and XP (details at http://www.hp.com/go/notebooks/WLAN)
	Frequency Band	2.4 GHz
	Data Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
	Modulation	Direct Sequence Spread Spectrum DBPSK, DQPSK, CCK, OFDM
	Security[1]	Supports 64- and 128-bit WEP, WPA, WPA2, hardware-accelerated AES, 802.1x authentication types EAP-TLS, EAP-TTLS, PEAP-GTC, PEAP-MSCHAPv2, LEAP, EAP-FAST.

	Support for Cisco Security Features (proven compatibility with Cisco Aironet infrastructure products through the Cisco Compatible Extensions Program Version 4).	
Sub-channels	Multinational support with frequency bands and channels compliant to local regulations.	
Media Access Protocol	CSMA/CA (Collision Avoidance) with ACK	
Network Architecture Models	Ad-hoc (Peer to Peer) Infrastructure (Access Point Required)	
Roaming	IEEE 802.11 compliant roaming between access points	
Output Power (for CKK)[2]	17.5 dBm	
Output Power (for OFDM; power varies by data rate)[2]	15 dBm	
Power Consumption	Transmit: 2.0 W (max) Receive: 1.5 W (max) Idle mode[3]: 390 mW (nominal) Sleep mode: 20 mW (max)	
Power Management	ACPI compliant power management 802.11 compliant power saving mode	
Receiver Sensitivity[4]	54 Mbps: -72 dBm, 11 Mbps: -88 dBm, 1 Mbps: -97 dBm	
Antenna type	High efficiency dual band antenna with spatial diversity, mounted in the display enclosure	
Range	802.11 g – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment
	802.11 b – Typical (@1 Mbps)	1200 feet – Outdoor Open Area 300 feet – Indoor, Office environment
Form Factor	PCI-Express MiniCard	
Weight	0.026 lb (12 g)	
Dimensions	0.19 x 1.2 x 2.0 in (4.75 x 29.85 x 50.8 mm)	
Operating Voltage	3.3v +/- 10%	
Temperature	Operating Non-operating	32° to 176° F (0° to 80° C) -40° to 176° F (-40° to 80° C)
Humidity	Operating Non-operating	10% to 90% (non-condensing) 5% to 95% (non-condensing)
Altitude	Operating Non-operating	0 to 10,000 ft (3,048 m) 0 to 50,000 ft (15,240 m)
Configuration Utility[5]	Microsoft Windows 2000 or XP Choice of Configuration Utility: • Microsoft Windows XP Wireless Network Connection Manager • Broadcom Wireless Configuration Utility (required for Cisco Compatible Extensions support) Microsoft Windows Vista • Microsoft Windows Vista Wireless Network Connection Manager	
LED Activity	LED Off – Radio OFF; Solid LED On – Radio ON	

1. Check latest software/driver release for updates on supported security features.
2. Maximum output power may vary by country according to local regulations.
3. In Power Save Polling mode.
4. Receiver sensitivity is measured at a packet error rate of 8% for 802.11b (CKK modulation) and a packet error rate of 10% for 802.11a/g (OFDM modulation).
5. WLAN supplier's client utility is required for Cisco Compatible Extensions support with Microsoft Windows 2000 or XP. WLAN may also be compatible with certain third-party software supplicants.

HP Integrated Module with Bluetooth Wireless Technology	Bluetooth Specification	2.0 Compliant
	Dimensions	1.02 x 0.55 x 0.22 in (26 x 14 x 5.7 mm)
	Frequency Band	2402 to 2480 MHz
	Number of Available Channels	79 (1 MHz) available channels
	Data Rates and Throughput	3 Mbps data rate; throughput up to 2.17 Mbps Synchronous Connection Oriented links up to 3, 64 kbps, voice channels Asynchronous Connection Less links 2178.1 kbps/177.1 kbps asymmetric or 1306.9 kbps symmetric
	Transmit Power	-6 dBm to 4 dBm (Bluetooth Class II)
	Receiver Sensitivity	Better than -80 dBM at 0.1 % raw bit error rate
	Power Consumption	Peak (Tx) 264 mW Peak (Rx) 231 mW Sleep <1 mW
	Antenna	Internally integrated within module
	Range	Up 33 ft (10 m)
	Electrical Interface	USB 2.0 compliant Microsoft Windows Plug and Play compliant
	OS Support	Genuine Windows Vista Genuine Windows XP Genuine Windows 2000
	Bluetooth Software Supported	Broadcom Bluetooth for Windows Microsoft Windows XP Bluetooth Software
	Link Topology	Point to Point, Multipoint Pico Nets up to 7 slaves
	Security	Full support of Bluetooth Security Provisions
	Power Management	Microsoft Windows ACPI, and USB Bus Support Self configurable to optimize power conservation in all operating modes, including Standby, Hold, Park, and Sniff
	Certifications	All necessary regulatory approvals for supported countries, including: FCC (47 CFR) Part 15C, Section 15.247 & 15.249 ETS 300 328, ETS 300 826 Low Voltage Directive IEC950 UL, CSA, and CE Mark

Technical Specifications

Temperature	Operating	-4° to 158° F (-20° to 70° C)
	Non-operating	-40° to 176° F (-40° to 80° C)
Humidity	Operating	10% to 90%
	Non-operating	5% to 95%
Altitude	Operating	15,000 ft (4,572 m)
	Non-operating	40,000 ft (12,192 m)
Bluetooth Profiles Supported	(with Bluetooth for Windows 4.0 software)	
	Serial Port Profile (SPP)*	
	Dial-Up Networking (DUN)*	
	Generic Object Exchange Profile (GOEP)	
	Object Push Profile (OPP)*	
	File Transfer Profile (FTP)	
	Synchronization Profile (SYNC)	
	Hard Copy Cable Replacement (HCRP)*	
	Personal Area Networking Profile (PAN)*	
	Human Interface Device Profile (HID)*	
	FAX Profile (FAX)	
	Basic Imaging Profile (BIP)	
	Headset Profile (HSP)	
	Hands Free Profile (HFP)	
	Advanced Audio Distribution Profile (A2DP)	

* indicates the profile is also supported by Microsoft Windows XP SP2

Environmental Data	**Eco-Label Certifications**	This product has received or is in the process of being certified to the following approvals and may be labeled with one or more of these marks:

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